PATENT ABSTRACTS OF JAPAN

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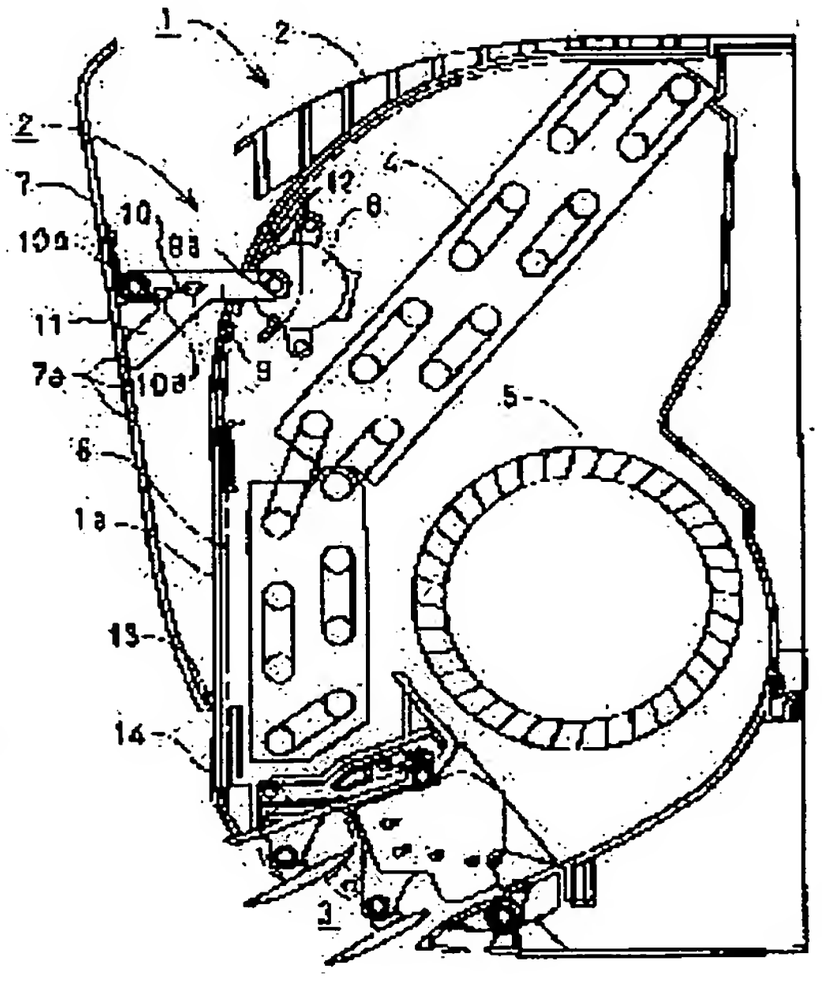
(54) AIR CONDITIONER

(57)Abstract:
PROBLEM TO BE SOLVED: To obtain an air conditioner in which an upper air inlet in the front face of the body can be opened/closed with an opening/closing body depending on the volume of air being sucked while improving the design and operational information indicating parts can be confirmed sequentially and surely.
SOLUTION: When a large quantity of air is sucked from air inlets 2 made in the upper surface and at an upper part of the front face of a body 1, an opening/closing body 7 is turned by means of a drive motor 8 and a drive link 9 to separate the upper part of the opening/closing body 7 from a front panel 1a so that air can be sucked from the air inlet 2 at an upper part of the front face and indicating parts 14 at the lower part of the front panel covered with the opening/closing body 7 can be confirmed visually. When a filter 6 is inserted or drawn out, the drive link is turned furthermore to separate the lower end of the opening/closing body rotating while touching a contact piece 11 from the front panel.



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* NOTICES *

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CLAIMS

[Claim(s)]

[Claim 1] Inlet port equipped with the filter it can insert [filter] from the lower part of this front panel is prepared in the front upper part and the top face of a front panel which constitute a body. In the air conditioner which an outlet is prepared in the front lower part and comes to prepare a heat exchanger and a blower fan in the air duct which connects these inlet port and an outlet The driving gear which is opened and closed with the closing motion object with which the inlet port of said front upper part consists of a panel, and drives this closing motion object A drive motor, The driving link where both ends were connected to the driving shaft and said closing motion object of this drive motor, It extends in an energization means to energize the lower limit of said closing motion object to said front-panel side, and the lower part of said driving link. A point is made to contact the rear face of said closing motion object in connection with rotating this driving link. It consists of pieces of contact which make the lower limit of this closing motion object estrange from said front panel. In case a lot of air is inhaled from said inlet port, said closing motion object is rotated by said drive motor and said driving link. Estrange the upper part and said front panel of this closing motion object, and it enables it to inhale air from the inlet port of said front upper part. The air conditioner characterized by making it the lower limit of said closing motion object which rotates said driving link further, contacts and rotates said piece of contact estrange from said front panel when inserting [filter / said].
[Claim 2] The air conditioner according to claim 1 characterized by the thing for which the connection of said driving link and said closing motion object was equipped with said energization means, and both ends were stopped by these driving links and the closing motion object, and which twist and consists of coiled spring.
[Claim 3] The air conditioner according to claim 1 or 2 characterized by forming the second stopper positioned to said front panel or said drive motor at the position to which the first stopper positioned in the location which closes the inlet port of said front upper part with said closing motion object, and the lower limit of said closing motion object estranged said driving link from said front panel.
[Claim 4] Claim 1 characterized by installing the bush adjacent to said front panel in the lower limit of said closing motion object, an air conditioner according to claim 2 or 3.
[Claim 5] The air conditioner according to claim 4 characterized by installing said bush over the longitudinal direction of the lower limit of said closing motion object.
[Claim 6] The air conditioner according to claim 4 or 5 characterized by said bush consisting of synthetic resin which has lubricity.
[Claim 7] The air conditioner according to claim 1 characterized by making it the intake airstream absorbed from the inlet port of said front upper part pass minor-axis section both sides cross-section abbreviation elliptical [said] when it comes to form said driving shaft in the shape of a cross-section abbreviation ellipse, it rotates said closing motion object and the upper part and said front panel are estranged.

[Claim 8] The air conditioner according to claim 7 characterized by forming the driving shaft of the shape of said cross-section abbreviation ellipse in tubed.
[Claim 9] Claim 1 characterized by preparing an air hole in said closing motion object, claim 2, claim 3, claim 4, an air conditioner according to claim 5 or 6.
[Claim 10] said air hole -- two or more staves -- and -- or the air conditioner according to claim 9 characterized by coming to consist of studs which connect these.
[Claim 11] Claim 1 characterized by the lower part of said closing motion object which covered the lower part of this front panel moving up, and enabling it to check said display by looking while preparing the display in the lower part of said front panel, rotating said closing motion object and estranging the upper part and said front panel, claim 2, claim 3, claim 4, claim 5, claim 7, an air conditioner according to claim 9 or 10.
[Claim 12] the printing display said whose display printed operation information -- and -- or the air conditioner according to claim 11 characterized by consisting of LED.
[Claim 13] The air conditioner according to claim 3 characterized by the ability to carry out the sequential rotation of said driving link in the location of the location of said first stopper to said second stopper with this stepping motor by said drive motor consisting of a stepping motor.
[Claim 14] Claim 11 which carries out sequential rotation of said driving link, and is characterized by the ability to carry out the sequential check by looking of said display corresponding to the lower part of said closing motion object moving up, an air conditioner according to claim 12 or 13.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] It relates to the structure which enabled it to check by looking exactly the display which displays operation information one by one while opening [this invention] and closing the inlet port of the front-face upper part of a body according to an intake air content with a closing motion object, raising design nature to a detail more with respect to an air conditioner.
[0002]
[Description of the Prior Art] Raising design nature, as a conventional air conditioner which enabled it to perform easily the attachment and detachment of the cleaning nature of an intake louver (equivalent to the closing motion object by this invention), and a filter which open and close the inlet port of the front face of a body, as drawing 4 shows, an example which is indicated by JP,9-210401,A is known. "If the written contents in the example concerned are quoted Prepare intake section 13' in anterior part, and front panel 7' is prepared in the front face of makeup covering 5' possible [closing motion] or removable through a hinge region. Aforementioned intake section 13' It is aforementioned intake section 13' in the 1st condition. It conceals and is aforementioned intake section 13' in the 2nd condition. Two or more intake

louvers 17 to release and which are attached pivotable, the louver drive section which it has [section] the interlocking section which interlocks said two or more intake louvers 17, and operates the aforementioned intake louver 17 to said makeup covering 5' -- leaving -- front panel 7' -- closing motion -- or it is made removable. " -- things -- "-- the cleaning nature of front panel 7' or case anterior part and attachment and detachment of a filter are made easy, raising the design nature of an appearance design. " -- ** -- the effectiveness to say was done so.

[0003] however, from the aforementioned intake louver 17 being the configuration which consists of two or more intake louver 17a, 17b, and 17c Components mark increase. Components cost and metal mold cost become high, or Moreover, said two or more intake louver 17a, 17b, and 17c From it being a long and slender configuration Intake [**** / becoming the cause which a non-set arises in the clearance dimension of these upper and lower sides and spoils design nature] louver of further aforementioned plurality 17a, 17b, and 17c It had the trouble of being unable to take out a filter easily only by making it rotate.

[0004]

[Problem(s) to be Solved by the Invention] In this invention, while opening and closing the inlet port of the front-face upper part of a body according to an intake air content with a closing motion object, raising design nature in view of the above-mentioned trouble, it aims at offering the air conditioner which enabled it to check by looking exactly the display which displays operation information one by one.

[0005]

[Means for Solving the Problem] In order that this invention may solve the above-mentioned technical problem, on the front upper part and the top face of a front panel which constitute a body In the air conditioner which inlet port equipped with the filter it can insert [filter] from the lower part of this front panel is established, and an outlet is prepared in the front lower part, and comes to prepare a heat exchanger and a blower fan in the air duct which connects these inlet port and an outlet The driving gear which is opened and closed with the closing motion object with which the inlet port of said front upper part consists of a panel, and drives this closing motion object A drive motor, The driving link where both ends were connected to the driving shaft and said closing motion object of this drive motor, It extends in an energization means to energize the lower limit of said closing motion object to said front-panel side, and the lower part of said driving link. A point is made to contact the rear face of said closing motion object in connection with rotating this driving link. It consists of pieces of contact which make the lower limit of this closing motion object estrange from said front panel. In case a lot of air is inhaled from said inlet port, said closing motion object is rotated by said drive motor and said driving link. Estrange the upper part and said front panel of this closing motion object, and it enables it to inhale air from the inlet port of said front upper part. In case it inserts [filter / said], said driving link is rotated further and it has the composition that the lower limit of said closing motion object which contacts and rotates estranged said piece of contact from said front panel.

[0006] Moreover, the connection of said driving link and said closing motion object is equipped with said energization means, and it has the composition which twists and consists of coiled spring that both ends were stopped by these driving links and the closing motion object.

[0007] Moreover, it has the composition of having formed the second stopper positioned to said front panel or said drive motor at the position to which the first stopper positioned in the location which closes the inlet port of said front upper part with said closing motion object, and the lower limit of said closing motion object estranged said driving link from said front panel.

[0008] Moreover, it has composition which installed the bush adjacent to said front panel in the lower limit of said closing motion object.

[0009] Moreover, it has composition which installed said bush over the longitudinal direction of the lower limit of said closing motion object.

[0010] Moreover, said bush has composition which consists of synthetic resin which has lubricity.

[0011] Moreover, when it comes to form said driving shaft in the shape of a cross-section abbreviation ellipse, it rotates said closing motion object and the upper part and said front panel

are estranged, it has the composition of having made it the intake airstream absorbed from the inlet port of said front upper part pass minor-axis section both sides cross-section abbreviation elliptical [said].
[0012] Moreover, it has composition which formed the driving shaft of the shape of said cross-section abbreviation ellipse in tubed.
[0013] Moreover, it has the composition of having prepared the air hole in said closing motion object.
[0014] moreover, said air hole -- two or more staves -- and -- or it consists of studs which connect these.
[0015] Moreover, a display is prepared in the lower part of said front panel, and the lower part of said closing motion object which covered the lower part of this front panel has composition which moves up and enabled it to check said display by looking at the same time it rotates said closing motion object and estranges the upper part and said front panel.
[0016] moreover, the printing display said whose display printed operation information -- and -- or it has composition which consists of LED.
[0017] Moreover, said drive motor consists of a stepping motor, and has composition which could be made to carry out sequential rotation of said driving link in the location of said second stopper from the location of said first stopper with this stepping motor.
[0018] Furthermore, sequential rotation of said driving link is carried out, and it has composition which could be made to carry out the sequential check by looking of said display corresponding to the lower part of said closing motion object moving up.
[0019]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained as an example based on an accompanying drawing. the front panel where an air-conditioner body and 1a constitute the front-face side of this body in drawing 1 thru/or drawing 3 in 1 -- said -- the inlet port by which 2 was prepared in the front upper part and the top face of this body 1, the outlet by which 3 was prepared in the front lower part, the heat exchanger prepared in the air duct with which 4 connects these inlet port 2 and an outlet 3, the blower fan with which 5 was prepared in said air duct, and 6 are the filters prepared in said inlet port 2.
[0020] The driving gear which is opened and closed with the closing motion object 7 with which the inlet port 2 of said front upper part consists of a panel, and drives this closing motion object 7 A drive motor 8, The driving link 9 where both ends were connected to driving shaft 8a of this drive motor 8, and said closing motion object 7, The energization means later mentioned for energizing the lower limit of said closing motion object 7 to said front-panel 1a side, Extend in the lower part of said driving link 9, and a point is made to contact the rear face of said closing motion object 7 in connection with rotating this driving link 9. It consists of pieces 11 of contact which make the lower limit of this closing motion object 7 estrange from said front-panel 1a. In case a lot of air is inhaled from said inlet port 2, said closing motion object 7 is rotated by said drive motor 8 and said driving link 9. Estrange the upper part of this closing motion object 7, and said front-panel 1a, and it enables it to inhale air from the inlet port 2 of said front upper part. In case it inserts [filter / 6 / said], said driving link 9 is rotated further and it has the composition that the lower limit of said closing motion object 7 which contacts and rotates estranged said piece 11 of contact from said front-panel 1a. By this It becomes the structure which enabled it to open and close the inlet port 2 of said front upper part according to an intake air content with said closing motion object 7, being able to solve now the trouble in the conventional technique explained above, and raising design nature.
[0021] Moreover, an energization means to energize the lower limit of said closing motion object 7 to said front-panel 1a side The connection of said driving link 9 and said closing motion object 7 is equipped, and both ends are stop section 10a of these driving links 9 and the closing motion object 7. It has stopped composition which twists and consists of coiled spring 10. By this The lower limit of said closing motion object 7 can always be energized now to said front-panel 1a side, and this closing motion object 7 serves as backlash and structure it was made for there not to be.
[0022] Moreover, the first stopper 12 which positions said driving link 9 in the location which

closes the inlet port 2 of said front upper part with said closing motion object 7 to said front-panel 1a or said drive motor 8, By having formed the second stopper 12 positioned to the position estranged from said front-panel 1a, the lower limit of said closing motion object 7 has composition which enabled it to regulate correctly the rotation include angle of said driving link 9 driven with said drive motor 8 at a predetermined include angle.

[0023] Moreover, by having installed in the lower limit of said closing motion object 7 the bush 13 which contacts said front-panel 1a, the lower limit of said closing motion object 7 energized by said torsion coiled spring comes to contact said front-panel 1a through said bush 13, and has composition it was made not to spoil design nature as the lower limit of these closing motion object 7 and front-panel 1a were not damaged mutually.

[0024] Moreover, it has the composition of having enabled it to protect correctly the lower limit of this closing motion object 7 over a longitudinal direction, by having installed said bush 13 over the longitudinal direction of the lower limit of said closing motion object 7.

[0025] Moreover, said bush 13 has composition which consists of synthetic resin which has lubricity, and while being able to move more smoothly by this in case it moves up with the condition that the lower limit of said closing motion object 7 contacted said front-panel 1a as drawing 2 shows, the lower limit of these closing motion object 7 and front-panel 1a become the structure it was made not to damage mutually.

[0026] Moreover, as it comes to be formed in the shape of a cross-section abbreviation ellipse and drawing 2 shows, said driving shaft 8a the time of rotating said closing motion object 7 and estranging the upper part and said front-panel 1a -- the inlet port 2 of said front upper part, when it was made for the intake airstream absorbed clitteringly to pass minor-axis section both sides cross-section abbreviation elliptical [said] It has the composition of having enabled it to suppress small the air resistance by said driving shaft 8a.

[0027] Moreover, it has the composition of having achieved lightweight-ization, by having formed driving shaft 8a of the shape of said cross-section abbreviation ellipse in tubed, without reducing the reinforcement of this driving shaft 8a.

[0028] Moreover, by having prepared air hole 7a in said closing motion object 7, according to operational status, when an intake air content is little, air can be inhaled from the inlet port 2 of this air hole 7a and said top face, and it has composition which enabled it to supply a proper intake air content. In addition, since what is necessary is just to form said air hole 7a in the dimension and configuration which enabled it to constitute a necessary minimum aeration way, it has composition with the advantage of being able to form in the configuration to which it has a degree of freedom on the design which can raise design nature for said closing motion object 7, and can give the description, and fine dust etc. cannot adhere easily.

[0029] moreover, said air hole 7a -- two or more staves -- and -- or while giving the degree of freedom on the design which can raise design nature to said closing motion object 7 the same with having explained above, and can give the description to it by having consisted of studs which connect these, it becomes the structure which enabled it to give reinforcement suitably.

[0030] Moreover, at the same time it forms a display 14 in the lower part of said front-panel 1a, it rotates said closing motion object 7 and it estranges the upper part and said front-panel 1a The lower part of said closing motion object 7 which covered the lower part of this front-panel 1a has composition which moves up and enabled it to check said display 14 by looking. By this According to operational status, when an intake air content is abundant, as drawing 2 shows, said driving link 9 is rotated with said drive motor 8. When moving the lower limit of said closing motion object 7 up, the blow-off air content which blows off from an intake air content and said outlet 3 becomes abundant, for example, it becomes the structure which did so the stage effects that said display 14 which shows that it is [of powerful air conditioning] under operation could be checked by looking dramatically.

[0031] moreover, the printing display said whose display 14 printed operation information -- and -- or it becomes the structure which did so the stage effects that said display 14 could be checked by looking more dramatically and more vividly as it has composition which consists of LED and this explained above.

[0032] Said drive motor 8 consists of a stepping motor. Moreover, with this stepping motor By

the ability having been made to carry out in the location of said second stopper 12 sequential rotation of said driving link 9 from the location of said first stopper 12 The rotation include angle of said driving link 9 can be suitably changed to a linear between said first stopper 12 and the second stopper 12, and it has the composition of having enabled it to adjust more finely the intake air content absorbed from said inlet port 2.

[0033] Furthermore, it has composition which can impress a gradual change of the intake air content absorbed from said inlet port 2 by change of the graduation and color which designed this display 14 for example, in the vertical direction etc. by carrying out sequential rotation of said driving link 9, and could be made to carry out the sequential check by looking of said display 14 corresponding to the lower part of said closing motion object 7 moving up.

[0034] As drawing 1 thru/or drawing 3 show, the driving gear which is opened and closed with the closing motion object 7 which the inlet port 2 of said front upper part becomes from a panel by the above configuration, and drives this closing motion object 7 A drive motor 8, The driving link 9 where both ends were connected to driving shaft 8a of this drive motor 8, and said closing motion object 7, The energization means which consists of said torsion coiled spring 10 for energizing the lower limit of said closing motion object 7 to said front-panel 1a side, Extend in the lower part of said driving link 9, and a point is made to contact the rear face of said closing motion object 7 in connection with rotating this driving link 9. It consists of pieces 11 of contact which make the lower limit of this closing motion object 7 estrange from said front-panel 1a. In case a lot of air is inhaled from said inlet port 2, said closing motion object 7 is rotated by said drive motor 8 and said driving link 9. Estrange the upper part of this closing motion object 7, and said front-panel 1a, and it enables it to inhale air from the inlet port 2 of said front upper part. Since said driving link 9 is rotated further and the lower limit of said closing motion object 7 which contacts and rotates estranged said piece 11 of contact from said front-panel 1a when inserting [filter / 6 / said] While opening and closing the inlet port 2 of said front upper part according·to an intake air content with said closing motion object 7, being able to solve now the trouble in the conventional technique explained above, and raising design nature, it becomes the air conditioner which enabled it to check by looking exactly said display 14 which displays operation information one by one.

[0035]

[Effect of the Invention] While opening [according to this invention / raising design nature] and closing the inlet port of the front-face upper part of a body according to an intake air content with a closing motion object as mentioned above, it becomes the air conditioner which enabled it to check by looking exactly the display which displays operation information one by one.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view showing the condition of having closed the inlet port prepared in the front upper part of the air conditioner by this invention with the closing motion object.

[Drawing 2] It is the sectional view showing the condition of having opened the inlet port prepared in the front upper part of the air conditioner by this invention.
[Drawing 3] It is the sectional view showing the condition of opening the front lower part of the air conditioner by this invention, and having enabled it to insert [filter].
[Drawing 4] It is the perspective view of the air conditioner by the conventional example.
[Description of Notations]
1 Air-Conditioner Body
1a Front panel
2 Inlet Port
3 Outlet
4 Heat Exchanger
5 Blower Fan
6 Filter
7 Closing Motion Object
7a Air hole
8 Drive Motor (Stepping Motor)
8a Driving shaft
9 Driving Link
10 Torsion Coiled Spring
10a Stop section
11 Piece of Contact
12 Stopper
13 Bush
14 Display

[Translation done.]

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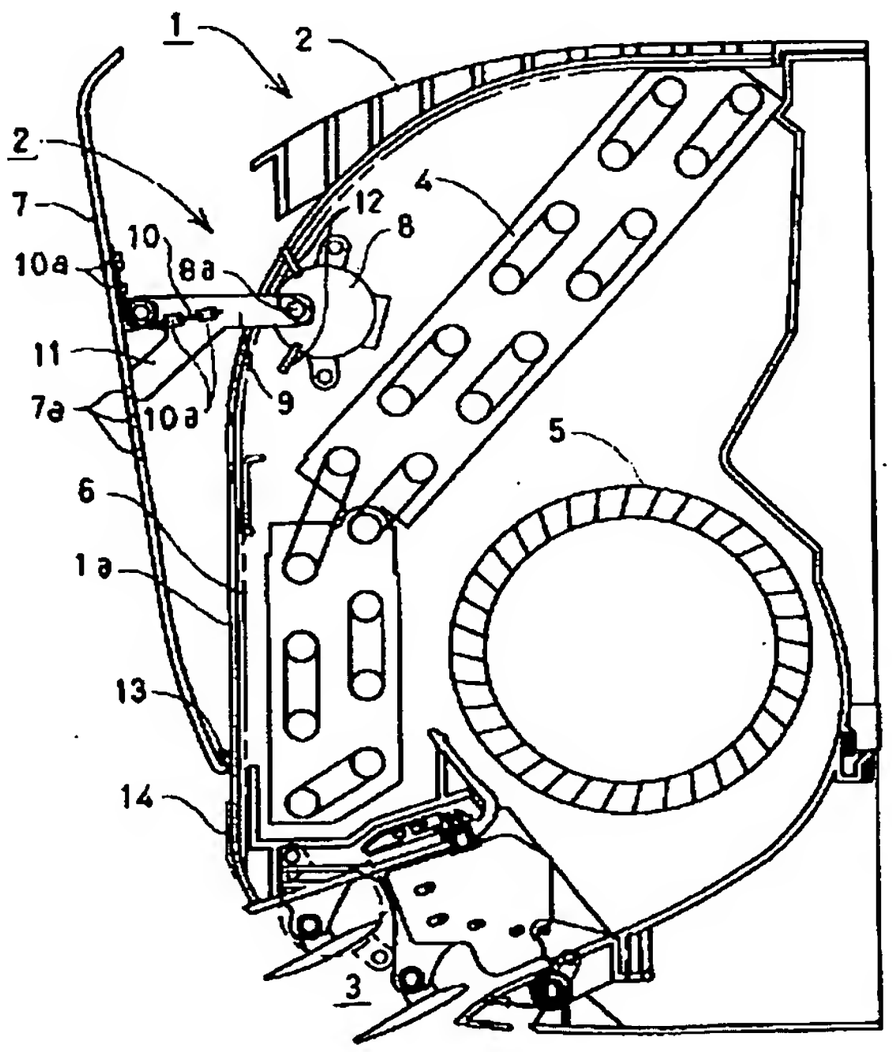
(54)【発明の名称】　空気調和機

(57)【要約】
【課題】　意匠性を高めつつ、開閉体により吸込空気量に応じて本体前面上部の吸込口を開閉するとともに、運転情報を表示する表示部を順次的確に視認できるようにした空気調和機を提供する。
【解決手段】　本体１の前面上部および上面に設けられた吸込口２から多量の空気を吸い込む際、駆動モータ８および駆動リンク９により開閉体７を回動し、同開閉体の上部と前面パネル1aとを離間して前面上部の吸込口２から空気を吸い込めるようにするとともに、前記開閉体７で覆われていた前記前面パネルの下部の表示部14を視認できるようにし、フィルタ６を挿脱する際、前記駆動リンクを更に回動し、当接片11を当接して回動する前記開閉体の下端が前記前面パネルから離間するようにした。



【特許請求の範囲】

【請求項１】　本体を構成する前面パネルの前面上部および上面に、同前面パネルの下部から挿脱可能なフィルタを備えた吸込口が設けられ、前面下部に吹出口が設けられ、これら吸込口と吹出口とを結ぶ空気通路に熱交換器および送風ファンが設けられてなる空気調和機において、

前記前面上部の吸込口が、化粧板からなる開閉体によって開閉され、同開閉体を駆動する駆動装置が、駆動モータと、同駆動モータの駆動軸および前記開閉体に両端部が接続された駆動リンクと、前記開閉体の下端を前記前面パネル側に付勢する付勢手段と、前記駆動リンクの下部に延出され、同駆動リンクを回動するのに伴い先端部を前記開閉体の裏面に当接させて、同開閉体の下端を前記前面パネルから離間させる当接片とで構成され、

前記吸込口から多量の空気を吸い込む際、前記駆動モータおよび前記駆動リンクにより前記開閉体を回動し、同開閉体の上部と前記前面パネルとを離間して前記前面上部の吸込口から空気を吸い込めるようにし、前記フィルタを挿脱する際、前記駆動リンクを更に回動し、前記当接片を当接して回動する前記開閉体の下端が前記前面パネルから離間するようにしたことを特徴とする空気調和機。

【請求項２】　前記付勢手段が、前記駆動リンクおよび前記開閉体の接続部に装着され、両端部がこれら駆動リンクおよび開閉体に係止された捩じりコイルばねからなることを特徴とする請求項１に記載の空気調和機。

【請求項３】　前記前面パネルまたは前記駆動モータに、前記駆動リンクを、前記開閉体により前記前面上部の吸込口を閉じる位置に位置決めする第一ストッパと、前記開閉体の下端が前記前面パネルから離間した所定の位置に位置決めする第二ストッパとを設けたことを特徴とする請求項１または請求項２に記載の空気調和機。

【請求項４】　前記開閉体の下端に、前記前面パネルに当接するブッシュを添設したことを特徴とする請求項１、請求項２または請求項３に記載の空気調和機。

【請求項５】　前記ブッシュを、前記開閉体の下端の長手方向にわたって添設したことを特徴とする請求項４に記載の空気調和機。

【請求項６】　前記ブッシュが、潤滑性を有する合成樹脂からなることを特徴とする請求項４または請求項５に記載の空気調和機。

【請求項７】　前記駆動軸が、断面略楕円状に形成されてなり、前記開閉体を回動してその上部と前記前面パネルとを離間した際、前記前面上部の吸込口から吸い込まれる吸込空気流が前記断面略楕円形状の短径部両側を通過するようにしたことを特徴とする請求項１に記載の空気調和機。

【請求項８】　前記断面略楕円状の駆動軸を、筒状に形成したことを特徴とする請求項７に記載の空気調和機。

【請求項９】　前記開閉体に、通気孔を設けたことを特徴とする請求項１、請求項２、請求項３、請求項４、請求項５または請求項６に記載の空気調和機。

【請求項１０】　前記通気孔が、複数の横桟および、またはこれらを連結する縦桟とで構成されてなることを特徴とする請求項９に記載の空気調和機。

【請求項１１】　前記前面パネルの下部に表示部を設け、前記開閉体を回動してその上部と前記前面パネルとを離間すると同時に、同前面パネルの下部を覆った前記開閉体の下部が上方に移動して前記表示部を視認できるようにしたことを特徴とする請求項１、請求項２、請求項３、請求項４、請求項５、請求項７、請求項９または請求項１０に記載の空気調和機。

【請求項１２】　前記表示部が、運転情報を印刷した印刷表示および、またはＬＥＤからなることを特徴とする請求項１１に記載の空気調和機。

【請求項１３】　前記駆動モータがステッピングモータからなり、同ステッピングモータにより、前記駆動リンクを前記第一ストッパの位置から前記第二ストッパの位置に順次回動できるようにしたことを特徴とする請求項３に記載の空気調和機。

【請求項１４】　前記駆動リンクを順次回動し、前記開閉体の下部が上方に移動するのに対応して、前記表示部を順次視認できるようにしたことを特徴とする請求項１１、請求項１２または請求項１３に記載の空気調和機。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、空気調和機に係わり、より詳細には、意匠性を高めつつ、開閉体により吸込空気量に応じて本体前面上部の吸込口を開閉するとともに、運転情報を表示する表示部を順次的確に視認できるようにした構造に関する。

【０００２】

【従来の技術】意匠性を高めつつ、本体前面の吸込口を開閉する吸込ルーバー（本発明による開閉体に相当）の清掃性とフィルタの着脱を容易に行えるようにした従来の空気調和機として、例えば図４で示すように、特開平９－２１０４０１号公報によって開示されているような事例が知られている。当該事例における記載内容を引用すれば、「前部に吸込部13’を設けフロントパネル7’を化粧カバー5’の前面にヒンジ部を介して開閉可能または着脱可能に設け、前記吸込部13’に、第１の状態で前記吸込部13’を隠蔽し、第２の状態で前記吸込部13’を解放する回転可能に取付けられる複数の吸込ルーバー17と、前記複数の吸込ルーバー17を連動させる連動部とを備え、前記化粧カバー5’に前記吸込ルーバー17を動作させるルーバ駆動機構部を残して、フロントパネル7’を開閉または着脱可能にする。」ことにより、「外観意匠の意匠性を高めつつ、フロントパネル7’や筐体前部の清掃性およびフィルタの着脱を容易にする。」という効果を

奏していた。

【０００３】しかしながら、前記吸込ルーバー17が、複数の吸込ルーバー17a，17b，17cからなる構成であることから、部品点数が多くなって部品コストおよび金型コストが高くなったり、また、前記複数の吸込ルーバー17a，17b，17c が細長い形状であることから、これらの上下の隙間寸法に不揃いが生じて意匠性を損ねる原因になったり、更に、前記複数の吸込ルーバー17a，17b，17c を回転させただけでは簡単にフィルタを取り出すことができないなどの問題点を有していた。

【０００４】

【発明が解決しようとする課題】本発明においては、上記の問題点に鑑み、意匠性を高めつつ、開閉体により吸込空気量に応じて本体前面上部の吸込口を開閉するとともに、運転情報を表示する表示部を順次的確に視認できるようにした空気調和機を提供することを目的とする。

【０００５】

【課題を解決するための手段】本発明は、上記課題を解決するため、本体を構成する前面パネルの前面上部および上面に、同前面パネルの下部から挿脱可能なフィルタを備えた吸込口が設けられ、前面下部に吹出口が設けられ、これら吸込口と吹出口とを結ぶ空気通路に熱交換器および送風ファンが設けられてなる空気調和機において、前記前面上部の吸込口が、化粧板からなる開閉体によって開閉され、同開閉体を駆動する駆動装置が、駆動モータと、同駆動モータの駆動軸および前記開閉体に両端部が接続された駆動リンクと、前記開閉体の下端を前記前面パネル側に付勢する付勢手段と、前記駆動リンクの下部に延出され、同駆動リンクを回動するのに伴い先端部を前記開閉体の裏面に当接させて、同開閉体の下端を前記前面パネルから離間させる当接片とで構成され、前記吸込口から多量の空気を吸い込む際、前記駆動モータおよび前記駆動リンクにより前記開閉体を回動し、同開閉体の上部と前記前面パネルとを離間して前記前面上部の吸込口から空気を吸い込めるようにし、前記フィルタを挿脱する際、前記駆動リンクを更に回動し、前記当接片を当接して回動する前記開閉体の下端が前記前面パネルから離間するようにした構成となっている。

【０００６】また、前記付勢手段が、前記駆動リンクおよび前記開閉体の接続部に装着され、両端部がこれら駆動リンクおよび開閉体に係止された捩じりコイルばねからなる構成となっている。

【０００７】また、前記前面パネルまたは前記駆動モータに、前記駆動リンクを、前記開閉体により前記前面上部の吸込口を閉じる位置に位置決めする第一ストッパと、前記開閉体の下端が前記前面パネルから離間した所定の位置に位置決めする第二ストッパとを設けた構成となっている。

【０００８】また、前記開閉体の下端に、前記前面パネルに当接するブッシュを添設した構成となっている。

【０００９】また、前記ブッシュを、前記開閉体の下端の長手方向にわたって添設した構成となっている。

【００１０】また、前記ブッシュが、潤滑性を有する合成樹脂からなる構成となっている。

【００１１】また、前記駆動軸が、断面略楕円状に形成されてなり、前記開閉体を回動してその上部と前記前面パネルとを離間した際、前記前面上部の吸込口から吸い込まれる吸込空気流が前記断面略楕円形状の短径部両側を通過するようにした構成となっている。

【００１２】また、前記断面略楕円状の駆動軸を、筒状に形成した構成となっている。

【００１３】また、前記開閉体に、通気孔を設けた構成となっている。

【００１４】また、前記通気孔が、複数の横桟および、またはこれらを連結する縦桟とで構成されている。

【００１５】また、前記前面パネルの下部に表示部を設け、前記開閉体を回動してその上部と前記前面パネルとを離間すると同時に、同前面パネルの下部を覆った前記開閉体の下部が上方に移動して前記表示部を視認できるようにした構成となっている。

【００１６】また、前記表示部が、運転情報を印刷した印刷表示および、またはＬＥＤからなる構成となっている。

【００１７】また、前記駆動モータがステッピングモータからなり、同ステッピングモータにより、前記駆動リンクを前記第一ストッパの位置から前記第二ストッパの位置に順次回動できるようにした構成となっている。

【００１８】更に、前記駆動リンクを順次回動し、前記開閉体の下部が上方に移動するのに対応して、前記表示部を順次視認できるようにした構成となっている。

【００１９】

【発明の実施の形態】以下、本発明の実施の形態を、添付図面に基づいた実施例として説明する。図１乃至図３において、１は空気調和機本体、1aは同本体の前面側を構成する前面パネル、同２は同本体１の前面上部および上面に設けられた吸込口、３は前面下部に設けられた吹出口、４はこれら吸込口２と吹出口３とを結ぶ空気通路に設けられた熱交換器、５は前記空気通路に設けられた送風ファン、６は前記吸込口２に設けられたフィルタである。

【００２０】前記前面上部の吸込口２が、化粧板からなる開閉体７によって開閉され、同開閉体７を駆動する駆動装置が、駆動モータ８と、同駆動モータ８の駆動軸8aおよび前記開閉体７に両端部が接続された駆動リンク９と、前記開閉体７の下端を前記前面パネル1a側に付勢するための後述する付勢手段と、前記駆動リンク９の下部に延出され、同駆動リンク９を回動するのに伴い先端部を前記開閉体７の裏面に当接させて、同開閉体７の下端を前記前面パネル1aから離間させる当接片11とで構成され、前記吸込口２から多量の空気を吸い込む際、前記駆

動モータ８および前記駆動リンク９により前記開閉体７を回動し、同開閉体７の上部と前記前面パネル1aとを離間して前記前面上部の吸込口２から空気を吸い込めるようにし、前記フィルタ６を挿脱する際、前記駆動リンク９を更に回動し、前記当接片11を当接して回動する前記開閉体７の下端が前記前面パネル1aから離間するようにした構成となっており、これによって、上記に説明した従来技術における問題点を解決できるようになり、意匠性を高めつつ、前記開閉体７により吸込空気量に応じて前記前面上部の吸込口２を開閉できるようにした構造となる。

【００２１】また、前記開閉体７の下端を前記前面パネル1a側に付勢する付勢手段が、前記駆動リンク９および前記開閉体７の接続部に装着され、両端部がこれら駆動リンク９および開閉体７の係止部10a に係止された捩じりコイルばね10からなる構成となっており、これによって、前記開閉体７の下端を前記前面パネル1a側に常時付勢できるようになり、同開閉体７がガタ付かないようにした構造となる。

【００２２】また、前記前面パネル1aまたは前記駆動モータ８に、前記駆動リンク９を、前記開閉体７により前記前面上部の吸込口２を閉じる位置に位置決めする第一ストッパ12と、前記開閉体７の下端が前記前面パネル1aから離間した所定の位置に位置決めする第二ストッパ12とを設けたことにより、前記駆動モータ８により駆動される前記駆動リンク９の回動角度を、所定の角度に正確に規制できるようにした構成となっている。

【００２３】また、前記開閉体７の下端に、前記前面パネル1aに当接するブッシュ13を添設したことにより、前記捩じりコイルばねにより付勢された前記開閉体７の下端が、前記ブッシュ13を介して前記前面パネル1aに当接するようになり、これら開閉体７の下端および前面パネル1aが互いに損傷しないようにして意匠性を損ねることがないようにした構成となっている。

【００２４】また、前記ブッシュ13を、前記開閉体７の下端の長手方向にわたって添設したことにより、同開閉体７の下端を長手方向にわたって正確に保護できるようにした構成となっている。

【００２５】また、前記ブッシュ13が、潤滑性を有する合成樹脂からなる構成となっており、これによって、図２で示すように、前記開閉体７の下端が前記前面パネル1aに当接した状態のままで上方に移動する際、より円滑に移動できるようになるとともに、これら開閉体７の下端および前面パネル1aが互いに損傷しないようにした構造となる。

【００２６】また、前記駆動軸8aが、断面略楕円状に形成されてなり、図２で示すように、前記開閉体７を回動してその上部と前記前面パネル1aとを離間した際、前記前面上部の吸込口２からから吸い込まれる吸込空気流が前記断面略楕円形状の短径部両側を通過するようにしたことにより、前記駆動軸8aによる空気抵抗を小さく抑えることができるようにした構成となっている。

【００２７】また、前記断面略楕円状の駆動軸8aを筒状に形成したことにより、同駆動軸8aの強度を低下させることなく軽量化をはかった構成となっている。

【００２８】また、前記開閉体７に通気孔7aを設けたことにより、例えば運転状態により吸込空気量が少量である場合、同通気孔7aおよび前記上面の吸込口２から空気を吸い込めるようになって、適正な吸込空気量を供給できるようにした構成となっている。なお、前記通気孔7aは、必要最小限の通気路を構成できるようにした寸法および形状に形成すればよいので、前記開閉体７を、意匠性を高めて特徴をもたせることができる意匠上の自由度を有し、また、細かい塵埃などが付着しにくい形状に形成できるなどの利点を有した構成となっている。

【００２９】また、前記通気孔7aが、複数の横桟および、またはこれらを連結する縦桟とで構成されたことにより、前記開閉体７に、上記に説明したのと同様に意匠性を高めて特徴をもたせることができる意匠上の自由度をもたせるとともに、適宜強度をもたせることができるようにした構造となる。

【００３０】また、前記前面パネル1aの下部に表示部14を設け、前記開閉体７を回動してその上部と前記前面パネル1aとを離間すると同時に、同前面パネル1aの下部を覆った前記開閉体７の下部が上方に移動して前記表示部14を視認できるようにした構成となっており、これによって、運転状態により吸込空気量が多量である場合、図２で示すように、前記駆動モータ８により前記駆動リンク９を回動し、前記開閉体７の下端を上方に移動させた際、吸込空気量および前記吹出口３から吹き出される吹出空気量が多量となって、例えば、強力な空気調和の実施中であることを示す前記表示部14を、劇的に視認できるという演出効果を奏するようにした構造となる。

【００３１】また、前記表示部14が、運転情報を印刷した印刷表示および、またはＬＥＤからなる構成となっており、これによって、上記に説明したとおり、前記表示部14を、より劇的に、且つより鮮明に視認できるという演出効果を奏するようにした構造となる。

【００３２】また、前記駆動モータ８がステッピングモータからなり、同ステッピングモータにより、前記駆動リンク９を前記第一ストッパ12の位置から前記第二ストッパ12の位置に順次回動できるようにしたことにより、前記駆動リンク９の回動角度を、前記第一ストッパ12および第二ストッパ12の間において適宜リニヤに変化させることができて、前記吸込口２から吸い込まれる吸込空気量を、よりきめ細かく調節できるようにした構成となっている。

【００３３】更に、前記駆動リンク９を順次回動し、前記開閉体７の下部が上方に移動するのに対応して、前記表示部14を順次視認できるようにしたことにより、同表

示部14を、例えば上下方向にデザインした目盛りや色彩の変化などにより、前記吸込口２から吸い込まれる吸込空気量の段階的な変化を印象づけることが可能な構成となっている。

【００３４】以上の構成により、図１乃至図３で示すように、前記前面上部の吸込口２が、化粧板からなる開閉体７によって開閉され、同開閉体７を駆動する駆動装置が、駆動モータ８と、同駆動モータ８の駆動軸8aおよび前記開閉体７に両端部が接続された駆動リンク９と、前記開閉体７の下端を前記前面パネル1a側に付勢するための前記捩じりコイルばね10からなる付勢手段と、前記駆動リンク９の下部に延出され、同駆動リンク９を回動するのに伴い先端部を前記開閉体７の裏面に当接させて、同開閉体７の下端を前記前面パネル1aから離間させる当接片11とで構成され、前記吸込口２から多量の空気を吸い込む際、前記駆動モータ８および前記駆動リンク９により前記開閉体７を回動し、同開閉体７の上部と前記前面パネル1aとを離間して前記前面上部の吸込口２から空気を吸い込めるようにし、前記フィルタ６を挿脱する際、前記駆動リンク９を更に回動し、前記当接片11を当接して回動する前記開閉体７の下端が前記前面パネル1aから離間するようにしたので、上記に説明した従来技術における問題点を解決できるようになり、意匠性を高めつつ、前記開閉体７により吸込空気量に応じて前記前面上部の吸込口２を開閉するとともに、運転情報を表示する前記表示部14を順次的確に視認できるようにした空気調和機となる。

【００３５】

【発明の効果】以上のように本発明によると、意匠性を高めつつ、開閉体により吸込空気量に応じて本体前面上部の吸込口を開閉するとともに、運転情報を表示する表＊示部を順次的確に視認できるようにした空気調和機となる。

【図面の簡単な説明】

【図１】本発明による空気調和機の前面上部に設けられた吸込口を開閉体で閉じた状態を示す断面図である。

【図２】本発明による空気調和機の前面上部に設けられた吸込口を開いた状態を示す断面図である。

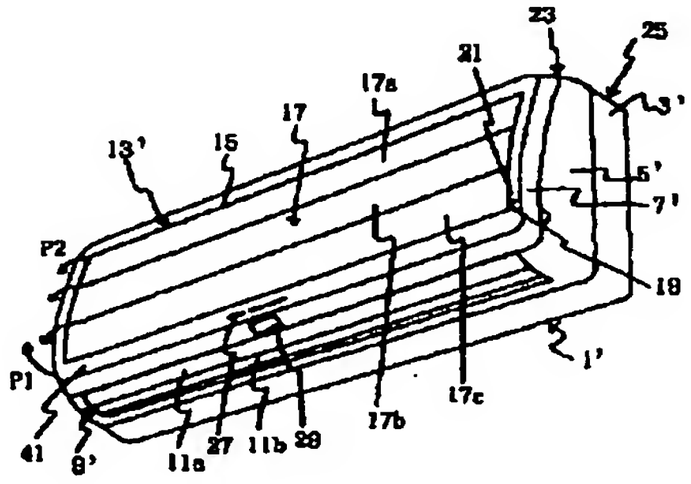
【図３】本発明による空気調和機の前面下部を開いてフィルタを挿脱できるようにした状態を示す断面図である。

【図４】従来例による空気調和機の斜視図である。

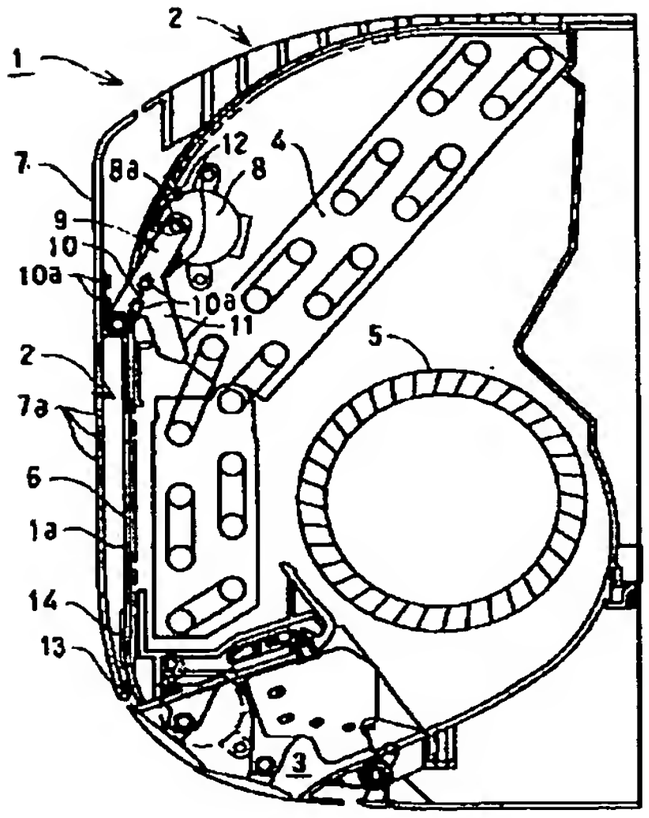
【符号の説明】

1	空気調和機本体
1a	前面パネル
2	吸込口
3	吹出口
4	熱交換器
5	送風ファン
6	フィルタ
7	開閉体
7a	通気孔
8	駆動モータ（ステッピングモータ）
8a	駆動軸
9	駆動リンク
10	捩じりコイルばね
10a	係止部
11	当接片
12	ストッパ
13	ブッシュ
14	表示部

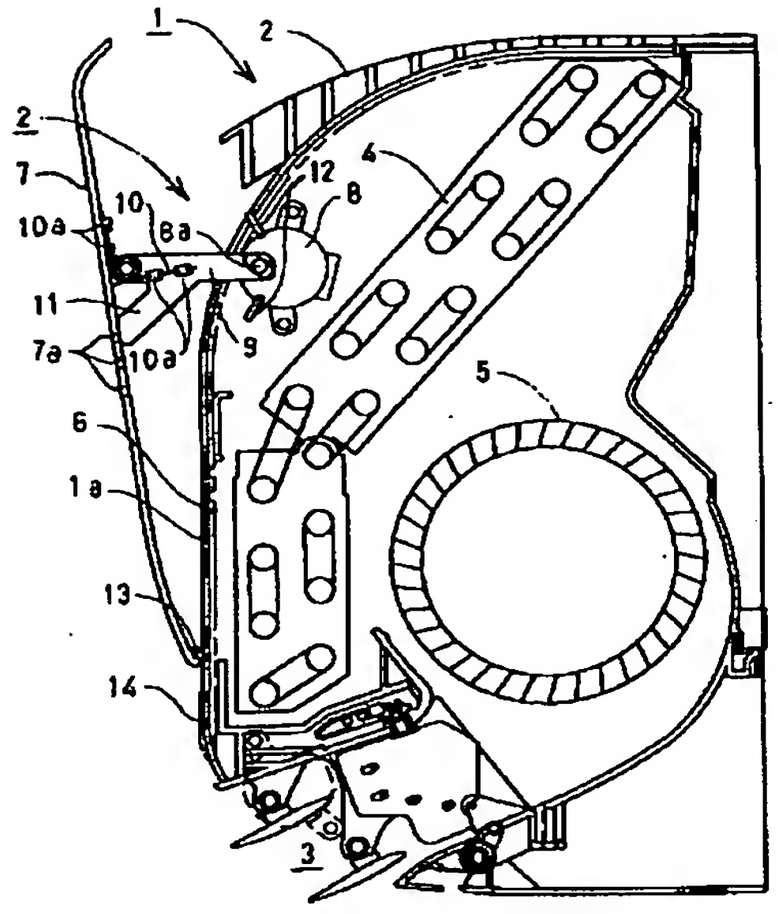
【図４】



【図１】


1
2
7
8a
12
8
4
9
10
10a
10a
11
5
2
7a
6
1a
14
13
3

【図２】


1
2
2
7
10
10a
8a
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8
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11
7a
10a
9
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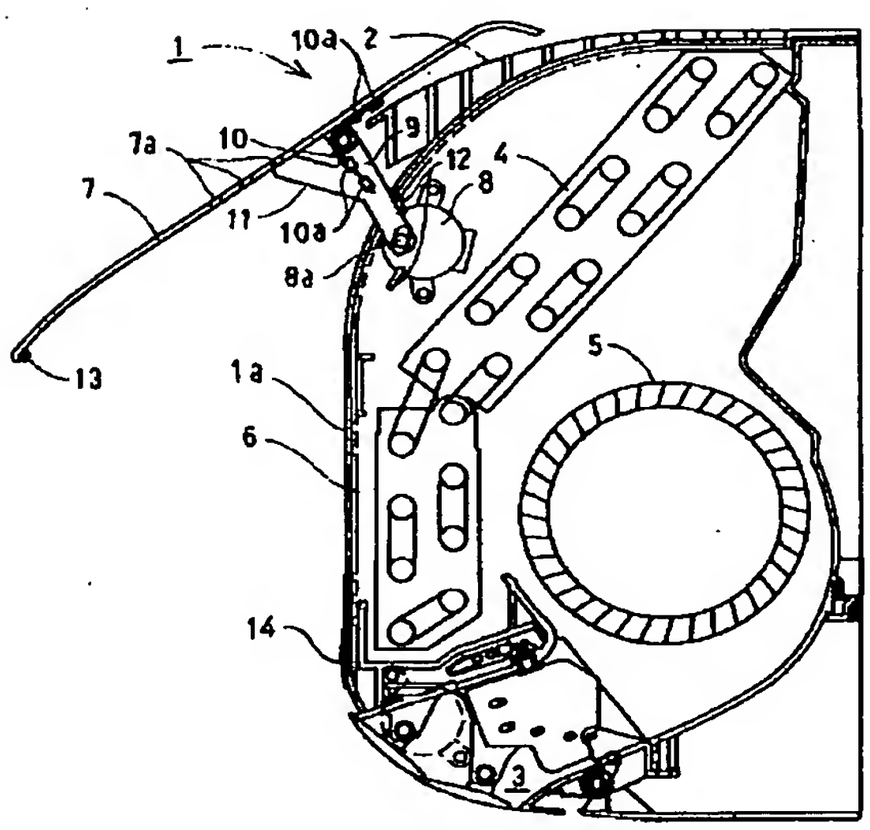
6
1a
13
14
3

【図３】


1
10a
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9
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8
11
10a
8a
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1a
6
14
3